UNITED STATES PATENT AND TRADEMARK OFFICE

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10/617,834	07/14/2003	Koji Wakayama	H-1100	5217

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29th August 2008*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-8 and 10-15* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-8 and 10-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 29th August 2008 have been fully considered but they are not persuasive.

Applicants argue that Gilbert is non-analogous art and fails to fill the missing teachings of "selection of an extension function processor based on the predicted number of packets (remarks, pg. 7 lines 17-22)" due to hindsight reasoning; also that Gilbert does not mention "determine *where* to send packets for load balancing (remarks, pg. 9 lines 16-17)."

1.   In response to applicants' argument that Gilbert is non-analogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicants were concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, independent claims 1 and 12 limitations do not mention what specifically the "extension function processors" perform besides "on basis of said amount of packets predicted, an extension function processor to which the packets are transmitted is selected from the extension function processors" and no where in the limitations mention *load balancing*. The "expert system" and "statistic monitoring agent" of Gilbert teach the *concept* of "based on the predicted number of packets (col. 3 lines 38-45: monitors number of transmitted and received network packets...; col. 4 lines 3-12: traffic patterns for any number... predict future traffic patterns)" to *take an action* such as

reallocating resources among paths. Badamo, modified by Fukumoto, teach a plurality

of service cards (hereby interpreted as "extension function processors") that allows routing to

any other cards, therefore, a **_selection_** of other cards, based on _traffic requirements_

(Badamo – [0041]: capability to classify traffic; [0047] lines 1-10: dynamically adapt to changing

network loads). The _traffic requirement_ for selection of "extension function processors" of

Badamo, modified by Fukumoto, may not be "based on the predicted number of

packets," yet, _traffic requirement_ may be set _arbitrarily_ to fit the needs of a certain

network environment; thus, if the "expert system" and "statistic monitoring agent" of

Gilbert is implemented into the "extension function processors" of Badamo, modified by

Fukumoto, for balancing resource allocation in different traffic conditions by **_selecting_** a

suitable "extension function processor (card)." Also, since Badamo, modified by

Fukumoto and Gilbert, does mention "routing can be determined dynamically… (Badamo

– [0041])" and Gilbert specifically mentions "predicts future traffic based on… source and

destination of network packets (Gilbert – col. 4 lines 8-12)," it is clear that "_where_ to send

packets for load balancing" is taught.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of
the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of
the various claims was commonly owned at the time any inventions covered therein
were made absent any evidence to the contrary. Applicant is advised of the obligation
under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was
not commonly owned at the time a later invention was made in order for the examiner to
consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)
prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148
USPQ 459 (1966), that are applied for establishing a background for determining
obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
      obviousness or nonobviousness.

Claims **1**, **4**, **5**, **8**, **10** and **12** are rejected under 35 U.S.C. 103(a) as being
unpatentable over **Badamo** et al (**US 2002/0181476 A1**) in view of **Fukumoto** et al (**US
2003/0012139 A1**) and in further view of **Gilbert** et al (**US 6,771,595 B1**).

Consider claims **1** and **12**, **Badamo** et al show in figure *3* an apparatus of
transmitting packets having a plurality of line cards (LC-*1~8*), each of has interfaces for
transmitting and receiving packets (network traffic *13* ↔); extension function processors
(service cards SC-*1~6*) connected to the switches (FC(s)) wherein the plurality of service
cards (SC-*1~6* as extension function processors) that performs encapsulation and

encryption (higher layer processing: as described in applicant specification pg. *13* ln. *11-13*) on

packets that were received from line cards (LC-*1~8* at physical "lower" layer one) ([0033],

[0036]); and based on load and throughput on each service card, a service card to which

the packets are transmitted is selected from the service cards and sent back to a line

card ([0047]). However, **Badamo** et al may not have *specifically* mentioned a statistic

information collection processor including means for analyzing header information

imparted to the packets and means for predicting the amount of packets to be received

by the plurality of (line card) interfaces from the header information and the amount of

packets which have been analyzed; or on the basis of the amount of packets predicted,

a extension function processor (service card) to which the packets are transmitted is

selected from the extension function processor. **Fukumoto** et al disclose line cards

have the capability to monitor / count the amount of packets (statistics information

collecting function) during communication and determine an outgoing path in reference to

(analyzing) a header imparted to IP packets ([0037-38]; *abstract*; claim *1*). It would have

also been obvious to one of ordinary skill in the art at the time the invention was made

to implement the statistics information collecting function of **Fukumoto** et al into the,

e.g. control card (CC *36*) or service cards, of **Badamo** et al, or e.g. CPU *3* of **Fukumoto**

et al, for assessing loads on the plurality of line cards. However, neither **Badamo** et al

nor **Fukumoto** et al have *specifically* mentioned the selection of extension function

processor is based on predicted number of packets, rather, **Badamo** et al selects

service card bases on throughput. **Gilbert** et al disclose an expert system that predicts

future traffic patterns based on number of packets received and transmitted for

reallocating memory between a receiving and transmitting device (col. *4* ln *3-7*; claims *11,12* & *15-17*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the extension function processors (service cards) selection process of **Badamo** et al to be on basis of future traffic pattern prediction function as taught by **Gilbert** et al rather than on basis of throughput as taught by **Badamo** et al for similar purposes of load balancing based on traffic among plurality of outputs.

Consider claim **4**, as applied to claim **1**, **Badamo** et al, as modified by **Fukumoto** et al and **Gilbert** et al, further show in figure *3* that the line cards and services cards are directly connected through a control card CC *36* ([0038]).

Consider claim **5**, as applied to claim **1**, **Fukumoto** et al further teach a header extraction unit in the line card interface for storing headers imparted to a plurality of packets which the interfaces transmit and receive ([0040]; fig. *2* items *12* & *19*; fig. *11* S*14*), and means for transmitting the frame to the statistic information collecting processor (e.g. counter and flow identification [0042]; claim *1*; fig. *2* items *16* & *17*).

Consider claim **8**, as applied to claim **1**, **Fukumoto** et al further teach the plurality of line cards each comprises a statistic information collecting processor (fig. *2* items *12* & *19*), which may be implemented into the service cards-side of the apparatus of **Badamo** et al as explained in claim **1** above.

Consider claim **10**, as applied to claim **1**, **Fukumoto** et al disclose the plurality of line cards *each* comprising a switch interface section and counter section and a function to monitor the amount of received packets during communication and determine an

outgoing path with reference to information header (shows a relationship of header

information corresponding to amount of received packets) through memory#1 and

memory#0 of received IP packets ([*0037-38* & *0040-42*]; *abstract*; claim *1*); wherein

memory#1 and memory#0 show each line cards and therefore; showing a relationship

of a correspondence between header information and an output line card [through the

destination port] ([*0040-41* & *0053*]; fig. *1* port ↔ line card links; fig. *9*).

Claims **6**, **7**, **13**, **14** and **15** are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Badamo** et al (**US 2002/0181476 A1**) in view of **Fukumoto** et al (**US

2003/0012139 A1**) and **Gilbert** et al (**US 6,771,595 B1**), as applied to claims **5**, **12** and

13, and in further view of **Shiota** (**US 6,987,762 B2**).

Consider claims **6** and **13**, and as applied to claims **5** and **12**, **Badamo** et al, as

modified by **Fukumoto** et al and **Gilbert** et al, disclose the claimed invention above

except may not have *specifically* mentioned the headers that are to be multiplexed into

a frame and are all equal to one another in size. **Shiota** discloses (SHIM) headers

stored in a frame are attached (multiplexed) into the frame and are all equal to one

another in size (figs. *12* & *13*; col. *13* ln. *30-51*). It would have been obvious to one of

ordinary skill in the art to incorporate the teachings of an apparatus that attaches

(multiplexes) headers of equal sizes as taught by **Shiota** in the apparatus of **Badamo** et

al, **Fukumoto** et al and **Gilbert et al**, in order to identify packet destinations.

Consider claim **14**, as applied to claim **13**, **Fukumoto** et al further disclose the

header extraction unit extract a part (a portion) of an IP header (fixed length 32 bits) or

TCP header (fixed length 32 bits) ([0040] ln. *9-12*).

Consider claim **7**, and as applied to claim **5** above, **Badamo** et al, as modified by

Fukumoto et al and **Gilbert** et al, disclose the claimed invention above except may not

have *specifically* mentioned means for multiplexing determines length of a header

portion to be extracted from a plurality of packets in response to information indicating

classification of the packets and that the packets are to be multiplexed into one frame.

Shiota discloses (SHIM) headers stored in a frame are attached (multiplexed) into the

frame and are all equal to one another in size and further teaches the classification of

packets and headers into one frame (figs. *2* (item *15*), *12* & *13*; col. *9* ln. *13-29*; col. *13* ln.

30-61). It would have been obvious to one of ordinary skill in the art to incorporate the

teachings of an apparatus that attaches (multiplexes) headers of equal sizes and

classifying headers and packets as taught by **Shiota** in the apparatus of **Badamo** et al,

Fukumoto et al and **Gilbert et al**, in order to identify packet destinations for each of the

packets.

Consider claim **15**, and as applied to claim **13** above, **Badamo** et al, as modified

by **Fukumoto** et al and **Gilbert** et al, disclose the claimed invention except specifically

mentioning extracting a header of the received packet only by a size corresponding to

information indicating classification of the packet set to a header to be imparted to each

of the packets. **Shiota** discloses extracting a header of a received packet (col. *13* ln. *30-*

40) only by a size corresponding to classification of the packet set to a header to be

imparted to each of the packets (col. *13* ln. *45-55*; e.g. shim header length). It would have been obvious to one of ordinary skill in the art to incorporate the teachings of **Shiota** in the apparatus of **Badamo** et al, **Fukumoto** et al and **Gilbert et al**, for rapid MPLS and IP processing.

Claim **11** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Badamo** et al (**US 2002/0181476 A1**) in view of **Fukumoto** et al (**US 2003/0012139 A1**) and **Gilbert** et al (**US 6,771,595 B1**), as applied to claim **10**, and in further view of **Kakisada** et al (**US 2001/0039558 A1**).

Consider claim **11**, as applied to claim **10**, **Badamo** et al, as modified by **Fukumoto** et al and **Gilbert** et al, disclose the claimed invention but may not have very *specifically* mentioned renewing statistic table on basis of the amount of packets predicted. **Kakisada** et al disclose a table being renewed based on predictive frames count ([0055]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to renew statistic table based on predicted amount of packet numbers as taught by **Kakisada** et al to the statistic table of **Badamo** et al, as modified by **Fukumoto** et al and **Gilbert** et al, to efficiently allocate memory and reduce delay among different subtasks.

Conclusion

2.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

3.   Yun et al, US 7263066 B1: Switch fabric backplane flow management using
credit-based flow control wherein a head cell may include a record of the packet, such
as an exact count of the number of cells in the packet, or an estimated count of cells in
the packet

4.   Iwamura, JP 2003-163933 A: packet flow monitoring by observing packet flow to
be sent from a terminal to a packet exchange network by a packet flow observing
means and calculating the statistic amount of a probability variable expressing the
characteristic of the packet flow or the estimate value of a distribution function by a
statistic arithmetic means

    This action is made Final. Applicant is reminded of the extension of time policy
as set forth in 37 CFR 1.136(a).

    A shortened statutory period for reply to this final action is set to expire THREE
MONTHS from the mailing date of this action. In the event a first reply is filed within
TWO MONTHS of the mailing date of this final action and the advisory action is not
mailed until after the end of the THREE-MONTH shortened statutory period, then the
shortened statutory period will expire on the date the advisory action is mailed, and any
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of
the advisory action. In no event, however, will the statutory period for reply expire later
than SIX MONTHS from the mailing date of this final action.

    Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Xavier Szewai Wong whose telephone number is

571.270.1780. The examiner can normally be reached on Monday through Friday 8:30

am - 6:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Seema Rao can be reached on 571.272.3174. The fax phone number for

the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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Business Center (EBC) at 866.217.9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
x.s.w
3rd December 2008

/Ian N. Moore/
Primary Examiner, Art Unit 2416